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09/555,032	05/22/2000	ALFRED HAUENSTEIN	POO.0579	3783

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EXAMINER	
PATEL, KINARI M	

ART UNIT	PAPER NUMBER
2654	11

DATE MAILED: 02/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/555,032	HAUENSTEIN, ALFRED	
	Examiner	Art Unit	
	Kinari Patel	2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 December 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 May 2000* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claim 11 is rejected under 35 U.S.C. 102(e) as being anticipated by Bandara.

As per claim 11, Bandara discloses a device for voice recognition (Figure 1) and a means for adjusting an accuracy of the voice recognition system (column 3, line 11-13: reducing the size of the language model also reduces accuracy of the voice recognition system when the amount of used resources of the computer is reduced). Bandara further discloses a device for voice recognition where the means for adjusting the accuracy of the voice recognition system is arranged so that system parameters of the voice recognition system are adjustable, said system

parameters being computable using an input quantity (column 1, lines 6-15: the storage requirement of the computer is the computable input quantity, and the size of the statistical language model is the adjustable system parameter that determines that accuracy of the voice recognition system.)

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bandara (US Patent No. 5,899,973) in view of Matsumoto (US Patent No. 5,848,390).

As per claims 1 and 12, Bandara discloses a method for voice recognition, in which spoken language is recognized using a voice recognition system, comprising the steps of: running the voice recognition system on a computer (column 1, lines 6-7; column 4, lines 20-23). Bandara fails to disclose a method for voice recognition to further include b) determining a performance index of the computer by a program for computer performance assessment c) automatically specifying an input quantity for the voice recognition system using the performance index; and d) automatically adjusting the accuracy of the voice recognition system to an obtained computing power of the computer using said input quantity.

Determining a performance index of the computer by a program for computer performance assessment is well known in the art as evidenced by Matsumoto. Matsumoto discloses detecting a CPU performance by means of running a test program and detecting its running time (column 6, lines 49-54).

Automatically specifying an input quantity for the voice recognition system using the performance index; and automatically adjusting the accuracy of the voice recognition system to an obtained computing power of the computer using said input quantity is also well known in the art as evidenced by Matsumoto.

Matsumoto teaches a sampling-frequency decision module deciding the sampling frequency of the speech data based on the level of CPU performance (column 6, lines 61-67; column 7, lines 1-8) or a quantization-bit decision module deciding the number of quantization bits of the speech data based on the level of CPU performance (column 7, lines 61-67; column 8, lines 16-21). Here, the level of CPU performance representing running time is the input quantity and changing the sampling-frequency (column 7, lines 15-20) or changing the number of quantization bits of the speech data (column 8, lines 16-21) changes the accuracy of the speech synthesis system (column 2, lines 19-28). The same technique can be applied not only to a speech synthesis system, but also a voice recognition system.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of voice recognition of Bandara to further include determining a performance index of the computer by a program for computer performance assessment for the purpose of tailoring the voice recognition system to the particular system on which it is run.

As per claim 2, Bandera as modified by Matsumoto above discloses the method of voice recognition of claim 1. Bandera fails to teach determining values for system parameters of the voice recognition system in that the values are computed from an input quantity in accordance with a mapping specification.

Determining values for system parameters of the voice recognition system in that the values are computed from an input quantity in accordance with a mapping specification is well known in the art as taught by Matsumoto. It is obvious that changing the sampling frequency based on the running time (the input quantity) of a computer (column 7, lines 15-20) or changing the number of quantization bits based on the running time (the input quantity) of a computer (column 8, lines 16-21) involves a type of mapping specification to link the different running times of the computer to the various sampling frequencies of number of quantization bits. The same technique can be applied not only to a speech synthesis system, but also a voice recognition system.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of voice recognition of Bandara to further include determining values for system parameters of the voice recognition system in that the values are computed from an input quantity in accordance with a mapping specification for the purpose of linking two values while tailoring the voice recognition system to the particular system on which it is run.

As per claim 3, Bandara as modified by Matsumoto above discloses the method of voice recognition of claim 2, further comprising the step of: converting the mapping specification using a table. It is obvious that when adjusting one value (sampling frequency) based on another value (computer performance) (column 7, lines 15-20; column 8, lines 16-21), a table is a suitable format for achieving the result, where individual adjusting of various values of the input quantity to respectively different values of the system parameters can be carried out. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of voice recognition of Bandara to further include converting the mapping specification using a table in order to tailor the voice recognition system to the particular system on which it is run using an effective format.

As per claim 4, Bandara as modified by Matsumoto above discloses the method of voice recognition of claim 1, further comprising the step of: executing a setting process during operation of the voice recognition system. Bandara fails to teach a method of voice recognition further comprising the step of executing a setting process during the operation of the voice recognition system. Setting the input quantity is well known in the art as taught by Matsumoto.

Matsumoto teaches a setting module by which a user can set performance or conditions of a hardware part of a computer in which the system is implemented (column 3, lines 37-39). The same technique can be applied not only to a speech synthesis system, but also a voice recognition system.

Therefore, it would have been obvious to modify the voice recognition system of Bandara to further include the step of executing a setting process during operation of the voice

recognition system for the purpose of automatically computing the values of the system parameters of the voice recognition system that are linked to the input quantity and thus to automatically make the values accessible to the voice recognition system.

As per claim 5, Bandara as modified by Matsumoto above discloses the method of voice recognition of claim 1. Bandara further teaches (e) defining a threshold value for the acoustic distance values to identify words where the acoustic match exceeds a selected level. Bandara fails to teach an accuracy adjusting step of the voice recognition system including adjustment by the threshold for selecting distance parameters that are to be computed.

An accuracy adjusting step of the voice recognition system including adjustment by the threshold for selecting distance parameters that are to be computed as evidenced by Matsumoto. Matsumoto teaches a sampling-frequency decision module deciding the sampling frequency of the speech data that is based on the level of CPU performance (column 6, lines 61-67; column 7, lines 1-8) or a quantization-bit decision module deciding the number of quantization bits of the speech data based on the level of CPU performance (column 7, lines 61-67; column 8, lines 16-21). Here, the level of CPU performance representing running time is the input quantity and changing the sampling-frequency (column 7, lines 15-20) or changing the number of quantization bits of the speech data (column 8, lines 16-21) changes the accuracy of the speech synthesis system (column 2, lines 19-28). The same technique can be applied not only to a speech synthesis system, but also a voice recognition system.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the voice recognition system of Bandara wherein said accuracy

adjusting step of the voice recognition system includes adjustment by language model look-ahead for the purpose of either increasing or decreasing the quality of the voice recognition to take into account the tradeoff between computing power availability and voice recognition quality.

As per claim 6, Bandara as modified by Matsumoto above discloses the method of voice recognition of claim 5. Bandara fails to teach a method of voice recognition further comprising the step of: specifying at least one of the system parameters using the input quantity. Specifying at least one of the system parameters using the input quantity is well known in the art as evidenced by Matsumoto. Matsumoto teaches a sampling-frequency decision module deciding the sampling frequency of the speech data that is based on the level of CPU performance (column 6, lines 61-67; column 7, lines 1-8) or a quantization-bit decision module deciding the number of quantization bits of the speech data based on the level of CPU performance (column 7, lines 61-67; column 8, lines 16-21). Here, the level of CPU performance representing running time is the input quantity and changing the sampling-frequency (column 7, lines 15-20) or changing the number of quantization bits of the speech data (column 8, lines 16-21) changes the accuracy of the speech synthesis system (column 2, lines 19-28). The same technique can be applied not only to a speech synthesis system, but also a voice recognition system. In the voice recognition system, an analogous parameter is the threshold for selecting distance parameters that are to be computed.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the voice recognition system of Bandara further comprising the

step of specifying at least one of the system parameters using the input quantity for the purpose of either increasing or decreasing the quality of the voice recognition to take into account the tradeoff between computing power availability and voice recognition quality.

As per claim 7, Bandara as modified by Matsumoto above discloses the voice recognition method of claim 6. Bandara further teaches weighing the system parameters with respect to their influence on a respective target quantity (column 5, lines 40-41 and lines 51-67). Weighting function "g" weighs the acoustic distance factor "a" with weighting coefficient "k".

As per claim 8, Bandara as modified by Matsumoto above discloses the voice recognition method of claim 7. Bandara further teaches a voice recognition system wherein said target quantity is at least one of the following quantities: a) accuracy of the voice recognition system; and b) speed of the voice recognition system. Changing the acoustic distance factor of the voice recognition system determines the accuracy of the acoustic match for words (column 7, lines 58-62).

As per claim 9, Bandara as modified by Matsumoto above discloses the voice recognition method of claim 7. Bandara further teaches the step of: weighting the system parameters equally (column 5, lines 40-41 and lines 51-67). Weighting function "g" weighs the acoustic distance factor "a" with weighting coefficient "k". Since only one system parameter, namely the acoustic distance, is weighted, it is obviously weighted equally. However, if more than one system parameter is used, such as the pruning threshold, histogram pruning, acoustic look-ahead, or

language model look-ahead, it is well known in the art to weight these parameters equally in order to take into account the different factors that affect a voice recognition system in an efficient manner that maximizes desired characteristics.

As per claim 10, Bandara as modified by Matsumoto above discloses the voice recognition system of claim 7. Bandara further teaches the step of weighting the system parameters according to a prescribed weighting table (column 5, lines 40-41 and lines 51-67). Weighting function "g" weighs the acoustic distance factor "a" with weighting coefficient "k".

Using a weighting table to weight the system parameters is well known in the art. It is obvious that when adjusting one value based on another value a table is a suitable format for achieving the result, where individual adjusting of individual values with respect to the system parameters can be carried out. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of voice recognition of Bandara to further include weighting the system parameters according to a prescribed weighting table in order to balance the system parameters using an effective format with respect to their influence on the accuracy of the voice recognition system.

Response to Arguments

5. Applicant's arguments filed with respect to claim 1 has been fully considered but they are not persuasive.

Regarding claim 1, Applicant states, "Speech synthesis is not the same as voice recognition. If one were to attempt to incorporate the methods of Matsumoto into a voice recognition system, whereby the sampling frequency of the speech data would be changed or the number of quantization-bits of the speech data would be decided, numerous extracted features would be produced even for the very same speech signal. This would require that an absolutely exorbitant amount of data would have to be stored and processed in the respective speech recognition system."

Examiner agrees that "speech synthesis" is not equivalent to "voice recognition." This is why Examiner does not simply rely on Matsumoto, but relies on Bandara (US Patent 5,899,973) as the primary reference. The steps claimed in the method for voice recognition of Applicant are applied to the voice recognition system of Bandara, not a speech synthesis system. The steps in claim 1 are written so broadly that they read on Matsumoto (Col. 2, Ln. 19-28; Col. 6, Ln 61-67; Col. 7, Ln 1-8, 15-20 and 61-67; Col. 8, Ln. 16-21). Furthermore, there is a strong motivation to combine Bandara and Matsumoto for the purpose of tailoring the voice recognition system to the particular system on which it is run.

Conclusion

6. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kinari Patel whose telephone number is 703-305-8487. The examiner can normally be reached on 9 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on 703-305-9645. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

kp

RICHEMOND DORVIL
SUPERVISORY PATENT EXAMINER